Respiration as an Emotional Tool in Operatic Singing

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1. Introduction

Respiration is an essential element in operatic singing performance, providing the singer support for the proper production of tone. However, respiration can also serve as an expressive element in the communication of dramatic ideas, creating an emotional subtext to the expressive intentionality of the piece. Previous research supports the relationship between respiration and dramatic intention in classical singing.

2. Background

2.1 Music Performance

Collyer et al. (2009) found that instructions received during singing made significant differences in respiratory patterns. In addition, Foulds-Elliot (2004) identified a significant difference in the sound pressure level, as well as time taken on inhalation and exhalation in the rehearsal and performance environments for classical singers. Foulds-Elliot found consistent differences when subject were asked to sing as if in a rehearsal or performance setting. Subject demonstrated a higher lung volume and utilized more air when having an emotional connection to the sound. However, instructions to sing with support did not produce significant differences in lung onset volume. Collyer et al. proposes that these findings may suggest the differences in a technical and performance oriented instructions. Changing respiratory patterns could, therefore, one measure of embodied music cognition when examining emotional connectivity and interpersonal communication during singing performance.

Research by Peterson and Bjørkøy (2009) investigated the effects of emotional stimulus on respiratory patterns involving inter-costal and abdominal muscular activation. This study found that emotional stimulus resulted in an increased contribution from the lower lateral abdomen, lower thorax and abdomen, as well as less contribution from the anterior abdominal muscles during phonation when performing stimulus tacks involving extreme tones, swell tones, arpeggio and glissando.

2.2 Systematic Musicology

Vocal performance provides a unique viewpoint in the application of the ideas related to embodied music cognition, as the body functions as the primary mediator and performance medium. The singer's use of respiration is used as a measure to examine the role of embodiment when communicating emotional and musical intention. Respiration was found to be an accurate reflection of corporeal intention and was used to quantify the establishment of mutual adaptive behavioral resonances between musicians and audiences when articulated through the expressive intention of the singer. (Leman, 2008)

3. Aims

The central research question of this study was to examine the correlation between respiration and the intention to communicate emotional content in operatic vocal performance. Research generated preliminary data regarding potential changes in dramatic intention and emotional expression. Researchers sought to investigate how respiration in singing could be utilized by the artist to enhance the emotional intensity of the

music and communicate dramatic intention to the audience. This data was used as a method of elucidating the relationship between expressivity, respiration, and embodiment as a means of artistic communication between singer and audience.

4. Main Contribution

The study provides insight in learned behaviors and meaning construction through social interaction in musical performance. This research should assist in the development of research models that provide information about the effect of communication of musical and emotional meaning on the physical aspects of singing.

4.1 Methodology

Two experimental conditions were utilized; rehearsal without audience and performance with audience interaction. Subjects performed the same operatic repertoire in both settings and data was collected through the use of inductive plethysmography, which consist of inductance bands interwoven with fiber optic cable worn.

4.2 Results

Data measured in the course of the study included inspiration/expiration phases, respiratory rhythm and amplitude, and abdominal and inter-costal expansion. Preliminary results indicate a significant difference in the respiration phases for the two experimental settings, demonstrating the impact of the changing expressive intention of participant. While the values reported were relative to a particular participant, significant statistical difference was found in inhalation expansion values and exhalation values for both the lungs and abdomen between the experimental conditions.

5. Implications

This study investigated the role of embodied communication in singing performance, using theories of corporeal intention and performer interaction. In classical singing, respiration functions as a corporeal articulation that allowed researchers to quantify the impact of joint attention and the action – reaction cycle in musical communication between performer and audience. Furthermore, respiration, as a key variable, significantly affected the expressive intention of a classical singer. The study's findings demonstrate the role of nonverbal communication in cultural transmission, within the context of musical performance. Respiration is not only a natural function supporting the vocal instrument, but also serves in the mutual construction of meaning and emotional attunement and could provide further investigation between consciously controlled aspects of vocal technique and innate respiratory actions used for communication of intent in performance.

Author Biographies

Katty Kochman is a Ph.D.researcher at the Institute of Psychoacoustic and Electronic Music (IPEM). Her research incorporates the development ecological models for the study of performance and embodied cognition in music.

Marc Leman is the Director of the Institute of Psychoacoustic and Electronic Music (IPEM) and a Professor in Systematic Musicology within the Department of Musicology at the University of Gent, Belgium. He has a background in philosophy and his current research activities include cognitive/emotive, and social/cultural approaches to music analysis.

Keywords

Embodied Music Cognition, Music Performance, Music Communication, Vocal Performance, Audience Interaction

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